

ADAS Subroutine pypr

SUBROUTINE PYPR(E, E11, N, N11, EM, Z1, PHI, WI, WJ, TE, INTD, PY, RDEXC)

C

IMPLICIT REAL*8 (A-H, O-Z)

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C ***** FORTRAN77 SUBROUTINE: PYPR *****

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C PURPOSE: CALCULATES PY FACTOR (CF. VAN REGEMORTER, 1962) USING
C PERCIVAL, RICHARD AND COWORKER CROSS-SECTIONS.

C

C VALID ONLY FOR ELECTRON INDUCED TRANSITIONS BETWEEN WHOLE PRINCIPAL
C QUANTUM SHELLS IN HYDROGEN AND HYDROGENIC IONS, FOR N, N11 > 4
C HOWEVER ADJUSTMENTS MADE TO ALLOW USE OF FORMULAE FOR N < 4

C ***** H.P. SUMMERS, JET 12 NOVEMBER 1984 *****

C INPUT

C E=1/V**2 WITH V THE INITIAL EFFECTIVE PRINCIPAL QUANTUM NUMBER

C E11=1/V11**2 WITH V11 THE FINAL EFFECTIVE PRINCIPAL QUANTUM NUMBER

C N=INITIAL PRINCIPAL QUANTUM NUMBER

C N11=FINAL PRINCIPAL QUANTUM NUMBER (REQUIRE N11 > N AND V11 > V)

C EM=REDUCED MASS OF COLLIDING PARTICLE (MUST BE 1.0 IN THIS CASE)

C Z1=TARGET ION CHARGE +1

C PHI=(IH/EIJ)F WITH EIJ=TRANSITION ENERGY, F=ABS. OSCILL. STRENGTH

C WI=STATISTICAL WEIGHT OF INITIAL LEVEL

C WJ=STATISTICAL WEIGHT OF FINAL LEVEL

C TE=ELECTRON TEMPERATURE (K)

C INTD=<3 FOR TWO POINT GAUSSIAN QUADRATURE.

C = 3 FOR THREE POINT GAUSSIAN QUADRATURE

C =>3 FOR FOUR POINT GAUSSIAN QUADRATURE

C OUTPUT

C PY=P FACTOR

C RDEXC=DEXCITATION RATE COEFFICIENT (CM+3 SEC-1)

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C NOTES: THIS ROUTINE IS NOT YET PROPERLY ANNOTATED

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C UNIX-IDL PORT:

C

C VERSION: 1.1 DATE: 16-1-96

C MODIFIED: TIM HAMMOND (TESSELLA SUPPORT SERVICES PLC)

C - FIRST VERSION

C

C VERSION: 1.2 DATE: 16-05-07

C MODIFIED: Allan Whiteford

C - Updated comments as part of subroutine documentation
C procedure.

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C

INTEGER	INTD,	N,	N11	
REAL*8	E,	E11,	EM,	PHI
REAL*8	PY,	RDEXC,	TE,	WI
REAL*8	WJ,	Z1		